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impeding medium when active creating a resistive path in the flow of a current between the electrodes, thereby to reduce the flow of the current between the electrodes and consequently reducing the amount of electrolysis.

2. (Twice Amended) An electrochemical cell according to claim 1, wherein the current impeding medium is a quaternary ammonium compound selected from the group comprising n-alkyl dimethyl benzyl ammonium chloride, didecyl dimethyl ammonium chloride, didecyl methyl oxyethyl ammonium propionate, pyridine and quinoline, a non-ionic compound selected from the group comprising primary, secondary, tertiary, aliphatic and cycloaliphatic amines, or an anionic compound which is provided in the presence of a suitable cation to attract it to the negative electrode.

6. (Twice Amended) A method of reducing water loss in an electrochemical cell of the type having opposed positive and negative electrodes, an electrolyte in ionic contact with the electrodes, and having a first mode wherein the cell undergoes a charging reaction and a second mode wherein the cell undergoes an electrolysis reaction, the method including the steps of introducing into the cell a current impeding medium that is inactive during the first mode of the cell and active during the second mode of the cell, the current impeding medium when active providing through contact with the electrolyte a resistive path in a flow of a current between the electrodes, and applying sufficient potential across the electrodes to cause electrolysis of the electrolyte and to activate the current impeding medium into creating a resistive path in the flow of a current between the electrodes, thereby reducing electrolysis of the electrolyte.

10. (Twice Amended) A method according to claim 6, wherein the resistive path is formed as an impediment or barrier at the negative electrode to the flow of a current between the electrodes as well as to ions being attracted to the negative electrode or gas bubbles evolving from the negative electrode.

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16. (Once Amended) An electrochemical cell according to claim 15, wherein the current impeding medium does not negatively affect a discharging cycle of the secondary battery cell.

17. (Once Amended) An electrochemical cell according to claim 15, wherein the current impeding medium provides an improved cycling performance of the secondary battery cell.

18. (Once Amended) An electrochemical cell according to claim 15, wherein the secondary battery cell has a threshold potential defining a boundary between the first and second modes of the secondary cell above which the current impeding medium reduces electrolysis of the electrolyte and below which the current impeding medium is substantially inactive.

20. (Once Amended) An electrochemical cell according to claim 12, wherein the impediment or barrier provides a reduction in the flow of ions selected from the group comprising lead, antimony, arsenic, tin, iron, zinc, chromium, copper and silver ions.

21. (Once Amended) An electrochemical cell according to claim 1, wherein the current impeding medium is soluble and attaches to the negative electrode to create the resistive path.

Please add claims 22 - 29 as follows:

22. An electrochemical cell comprising opposed positive and negative electrodes and an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell having a first mode which provides little or no gassing and a second mode which provides significant gassing through electrolysis, the electrochemical cell further comprising a current impeding medium which is characterised as being substantially inactive during the first mode of the cell and as being active during the second mode of the cell, the current impeding medium when active

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creating a resistive path in the flow of the current between the electrodes, thereby to reduce the flow of the current between the electrodes and consequently reducing the amount of electrolysis.

23. An electrochemical cell comprising opposed positive and negative electrodes and an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell further comprising a current impeding medium that is characterised as creating through contact with the electrolyte a potential dependent resistive path in a flow of a current between the electrodes, thereby to reduce the flow of the current between the electrodes and consequently reducing the amount of electrolysis.

24. An electrochemical cell comprising opposed positive and negative electrodes and an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell further comprising a current impeding medium that is (i) a quaternary ammonium compound selected from the group comprising n-alkyl dimethyl benzyl ammonium chloride, didecyl dimethyl ammonium chloride, didecyl methyl oxyethyl ammonium propionate, pyridine and quinoline, (ii) a non-ionic compound selected from the group comprising primary, secondary, tertiary, aliphatic and cycloaliphatic amines, or (iii) an anionic compound which is provided in the presence of a suitable cation to attract it to the negative electrode, the current impeding medium providing through contact with the electrolyte a resistive path in a flow of a current between the electrodes, thereby to reduce the flow of the current between the electrodes and consequently reducing the amount of electrolysis.

25. An electrochemical cell comprising opposed positive and negative electrodes and an acidic electrolyte in ionic contact with the electrodes, the electrochemical cell further comprising a current impeding medium that is characterised as having a non-polar aspect and a polar aspect, the polar aspect constituting a positive charge carried by an atom of the fifth or sixth periodic group, the current impeding medium when active creating a resistive path in the flow of a current between the electrodes to reduce the amount of electrolysis.

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26. A lead-acid battery comprising opposed positive and negative electrodes and an electrolyte in ionic contact with the electrodes, the lead-acid battery being disposed to cause electrolysis when a sufficient amount of a potential is applied across the electrodes, the lead-acid battery further comprising a quaternary ammonium compound that provides through contact with the electrolyte a reduction in the flow of current between the electrodes when a potential sufficient to cause electrolysis of the electrolyte is applied across the electrodes.

27. An electrochemical cell comprising opposed positive and negative electrodes and an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell having a first mode wherein the cell undergoes a charging reaction and a second mode wherein the cell undergoes an electrolysis reaction, the electrolysis being caused by a flow of current between the electrodes and being accompanied by a flow of ions to the negative electrode and/or a flow of bubbles from the negative electrode, the electrochemical cell further comprising a current impeding medium that is characterised as being inactive during the first mode of the cell and active during the second mode of the cell, the current impeding medium when active forming an impediment or barrier over a surface of the negative electrode, the impediment or barrier providing at least one of: (a) a reduction in the flow of current between the electrodes; (b) a reduction in the flow of ions to the negative electrode; or (c) a reduction in the flow of gas bubbles from the negative electrode.

28. An electrochemical cell comprising opposed positive and negative electrodes and an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell having a first mode which provides little or no gassing and a second mode that provides significant gassing through electrolysis of the electrolyte, the electrolysis being caused by a flow of current between the electrodes and being accompanied by a flow of ions to the negative electrode and a flow of bubbles from the negative electrode, the electrochemical cell further comprising a current impeding medium which is characterised as being inactive during the first mode of the cell and active during the second mode of the cell, the current impeding medium when active forming an impediment or barrier over a surface of the negative electrode, the impediment or barrier

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providing at least one of: (a) a reduction in the flow of current between the electrodes; (b) a reduction in the flow of ions to the negative electrode; or (c) a reduction in the flow of gas bubbles from the negative electrode.

29. An electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes, and a boundary defining a negative electrode evolving substantially no gas and a negative electrode evolving gas, the electrochemical cell further comprising a current impeding medium that is characterised as being substantially inactive when the negative electrode evolves substantially no gas and active when the negative electrode evolves gas, the current impeding medium when active creating a resistive path in the flow of a current between the electrodes, thereby to reduce the flow of the current between the electrodes and consequently reducing the amount of electrolysis.